1. Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A parametric encoder for encoding an audio or speech signals s into sinusoidal code data, comprising:

- a segmentation unit (120) for segmenting said signal s into at least one single scale segment $x_m(n)$ with m = 1...M and for outputting the samples $x_m(0)$, ..., $x_m(L-1)$ of said segment $x_m(n)$; and
- a sinusoidal estimation unit (140) for estimating the sinusoidal code data representing said segment $x_m(n)$ from the received samples $x_m(0)$, ..., $x_m(L-1)$); characterized in that
- the segmentation unit (120) is further embodied for carrying out a frequency-warping operation in order to transform the output samples $x_m(0)$, ..., $x_m(L-1)$) onto a frequency-warped domain; and
- a post-processing filter (160) is provided for re-mapping said sinusoidal data output from the sinusoidal estimation unit (140) to an original frequency domain of the signal s.

2. (Original) The parametric encoder according to claim 1, characterized in that the segmentation unit (120) comprises

- a plurality of L-1 filters (122_1, ... 122_L-1) being connected in series for receiving the signal s(n) at the input of the first of said filters (122_1); and
- a sampling unit (124) for receiving and sampling said signal $s(n)=y_0(n)$ as well as the output signals
- $y_1(n)...y_{L-1}(n)$ of said L-1 filters (122_1, ... 122_L-1) in order to generate L samples $x_m(0)$, ..., $x_m(L-1)$ or

$x_m^0(0)$, ..., $x_m^0(L-1)$ of the segment x_m.

3. (Original) The parametric encoder according to claim 2, characterized in that at least some of the filters (122_1, ... 122_L-1) are embodied as all-pass filters.

4. (Original) The parametric encoder according to claim 3, characterized in that the some filters (122_1, ...
122_L-1) are embodied as first-order all-pass filters each having a transfer function A(z) according to:

$$A(z) = \frac{-\lambda^* + z^{-1}}{1 - \lambda z^{-1}},$$

wherein λ* denotes a complex-conjugation and wherein λ is preferably real valued.

5. (Original) The parametric encoder according to claim 4, characterized in that all of the filters (122_1, ... 122_L-1) out of the plurality of filters are embodied as first-order all-pass filter, each having a transfer function A(z) according to:

$$A(z) = \frac{-\lambda^* + z^{-1}}{1 - \lambda z^{-1}},$$

wherein λ* denotes a complex-conjugation and wherein λ is preferably real valued.

6. (Original) The parametric encoder according to claim 4, characterized in that the first filter (122_1) in said series connection receiving the signal s(n) has a transfer function A0(z) according to:

$$A_0(z) = \frac{1}{1 - \lambda z^{-1}},$$

the second filter (122_2) in said series connection following said first filter (122_1) has a transfer function A1(z) according to:

$$A_1(z) = \sqrt{1-|\lambda|^2}\,\frac{z^{-1}}{1-\lambda z^{-1}}, \text{ and}$$

the remaining filters (122_3...122_L-1) each are first order all-pass filters having a transfer function A(z) according to claim 4.

7. (Original) The parametric encoder according to claim 2, characterized in that

- in the segmentation unit (120) the plurality of L-1 filters (122_1, ... 122_L-1) being connected in series is embodied as tapped delay-line with each of the filters having a transfer function of $A(z) = z^{-1}$; and
- there is additionally provided a bi-lateral warping unit (126) for transforming the samples on the original frequency-domain of the signal s $x^{\circ}_m(-N_1)$, ..., $x^{\circ}_m(N_2)$ output by the sampling unit (124) into transformed samples $x_m(-M_1)$, ..., $x_m(M_2)$ on a frequency-warped domain by applying a bi-lateral frequency-warping operation to the samples $x^{\circ}_m(-N_1)$, ..., $x^{\circ}_m(N_2)$ and for outputting the transformed samples $x_m(-M_1)$, ..., $x_m(M_2)$ to said sinusoidal estimation unit (140).

8. (Original) The parametric encoder according to claim 7, characterized in that the bi-lateral warping unit (126) carries out the transformation of the samples x°_m into the samples x_m according to:

$$\begin{pmatrix} \vdots \\ x_m(-n) \\ \vdots \\ x_m(-1) \\ x(0) \\ x(1) \\ \vdots \\ x_m(n) \\ \vdots \end{pmatrix} = \begin{pmatrix} \vdots & & \vdots & & & & \\ q(n,N_1) & \cdots & q(n,1) & & & & \\ \vdots & & \vdots & & & & \\ q(1,N_1) & \cdots & q(1,1) & & & & \\ q(0,N_1) & \cdots & q(0,1) & 1 & q(0,1) & \cdots & q(0,N_2) \\ & & & & q(1,1) & \cdots & q(1,N_2) \\ & & & & \vdots & & \vdots \\ & & & & q(n,1) & \cdots & q(n,N_2) \\ & & & & \vdots & & \vdots \end{pmatrix} \begin{pmatrix} x_m^0(-N_1) \\ \vdots \\ x_m^0(-1) \\ x_m^0(0) \\ x_m^0(1) \\ \vdots \\ x_m^0(N_2) \end{pmatrix}$$

wherein q columnwise represents the impulse responses of the tapped line of all-pass filters (122_1 ... 122_L-1).

9. (Previously Presented) A method for encoding an audio or speech signals into sinusoidal code data, comprising the steps of:

- segmenting said signal s into at least one single scale segment $x_m(n)$ with m=1...M having the samples $x_m(0)$, ..., $x_m(L-1)$; and
- estimating the sinusoidal code data representing said segment $x_m(n)$ from the received samples $x_m(0)$, ..., $x_m(L-1)$);

characterized in that

- a frequency-warping operation is carried out such that the samples $x_m(0)$, ..., $x_m(L-1)$ are provided on a frequency-warped domain; and
- said sinusoidal data being estimated on the frequency-warped domain are re-mapped to the original frequency domain of the signal s.

10. (Previously Presented) A parametric encoder for encoding an audio or speech signal s into sinusoidal code data, comprising:

- a segmentation unit adapted to segment the signal s into at least one single scale segment $x_m(n)$ with m = 1...M and for outputting the samples $x_m(0)$, ..., $x_m(L-1)$ of the segment $x_m(n)$; and
- a sinusoidal estimation unit adapted to estimate the sinusoidal code data representing the segment $x_m(n)$ from the received samples $x_m(0)$, ..., $x_m(L-1)$); wherein the segmentation unit is adapted to carry out a frequency-warping operation in order to transform the output samples $x_m(0)$, ..., $x_m(L-1)$) onto a frequency-warped domain; and
- a post-processing filter adapted to re-map the sinusoidal data output from the sinusoidal estimation unit (140) to the original frequency domain of the signal s.

11. (Previously Presented) The parametric encoder according to claim 10, wherein the segmentation unit comprises:

- a plurality of filters connected in series for receiving the signal s(n) at the input of the first of the filters; and
- a sampling unit adapted to sample and receive the signal $s(n)=y_0(n)$ as and the output signals $y_1(n)...y_{L-1}(n)$ of the plurality of filters in order to generate L samples $x_m(0), ..., x_m(L-1)$ or $x_m^0(0), ..., x_m^0(L-1)$ of the segment x_m.

12. (Previously Presented) The parametric encoder according to claim 11, wherein at least some of the filters are embodied as all-pass filters.

13. (Previously Presented) The parametric encoder according to claim 12, wherein some of the plurality of filters are embodied as first-order all-pass filters each having a transfer function A(z) according to:

$$A(z)=\frac{-\lambda^{*}+z^{-1}}{1-\lambda z^{-1}},$$

wherein λ^* denotes a complex-conjugation and wherein λ is preferably real valued.

14. (Previously Presented) The parametric encoder according to claim 13, wherein all of the plurality of filters are embodied as first-order all-pass filter, each having a transfer function A(z) according to:

$$A(z)=\frac{-\lambda^{*}+z^{-1}}{1-\lambda z^{-1}},$$

wherein λ^* denotes a complex-conjugation and wherein λ is preferably real valued.

15. (Previously Presented) The parametric encoder according to claim 13, wherein a first filter in the series connection receiving the signal s(n) has a transfer function A0(z) according to:

$$A_0(z) = \frac{1}{1-\lambda z^{-1}},$$

a second filter in the series connection following the first filter has a transfer function A1(z) according to:

$$A_1(z) = \sqrt{1-|\lambda|^2}\,\frac{z^{-1}}{1-\lambda z^{-1}}, \text{ and}$$

the remaining filters each are first order all-pass filters having a transfer function.

16. (Previously Presented) The parametric encoder according to claim 11, wherein

- in the segmentation unit the plurality of filters being connected in series is embodied as tapped delay-line with each of the filters having a transfer function of $A(z) = z^{-1}$; and
- a bi-lateral warping unit adapted to transform the samples on the original frequency-domain of the signal s $x^{\circ}_m(-N_1), \ldots, x^{\circ}_m(N_2)$ output by the sampling unit into transformed samples $x_m(-M_1), \ldots, x_m(M_2)$ on a frequency-warped domain by applying a bi-lateral frequency-warping operation to the samples $x^{\circ}_m(-N_1), \ldots, x^{\circ}_m(N_2)$ and for outputting the transformed samples $x_m(-M_1), \ldots, x_m(M_2)$ to the sinusoidal estimation unit.

17. (Previously Presented) The parametric encoder according to claim 16, wherein the bi-lateral warping unit is adapted to carry out the transformation of the samples x°_m into the samples x_m according to:

$$\begin{pmatrix}\vdots\\ x_m(-n)\\ \vdots\\ x_m(-1)\\ x(0)\\ x(1)\\ \vdots\\ x_m(n)\\ \vdots\end{pmatrix} = \begin{pmatrix} \vdots & & \vdots & & & & \\ q(n,N_1) & \cdots & q(n,1) & & & & \\ \vdots & & \vdots & & & & \\ q(1,N_1) & \cdots & q(1,1) & & & & \\ q(0,N_1) & \cdots & q(0,1) & 1 & q(0,1) & \cdots & q(0,N_2)\\ & & & & q(1,1) & \cdots & q(1,N_2)\\ & & & & \vdots & & \vdots\\ & & & & q(n,1) & \cdots & q(n,N_2)\\ & & & & \vdots & & \vdots \end{pmatrix}\begin{pmatrix} x_m^0(-N_1)\\ \vdots\\ x_m^0(-1)\\ x_m^0(0)\\ x_m^0(1)\\ \vdots\\ x_m^0(N_2)\end{pmatrix}$$

wherein q columnwise represents the impulse responses of the tapped line of all-pass filters.